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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/782,993

02/12/2001

Stephen J. Elliott

10002385-1

1954

7590

12/13/2005

HEWLETT-PACKARD COMPANY

Intellectual Property Administration

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EXAMINER

MAIS, MARK A

ART UNIT

PAPER NUMBER

2664

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,993

Applicant(s)

STEPHEN J. ELLIOT

Examiner

Mark A. Mais

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2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 9-12, 15, and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by El-Batal et al. (USP 6,625,144).

3. With regard to claims 1 and 4, El-Batal et al. discloses a method for facilitating communication over a fibre channel (FC) system [**Fig. 1, the RAID controller is coupled to the host processor via a SCSI bus or Fibre Channel interface 141 and disk drives coupled via SCSI bus or Fibre Channel interface 140; col. 3, lines 9-15; see also col. 4, lines 20-26**] via a low bandwidth interface connected to a user device [**Figs. 1-3, Examiner interprets the FC system as the RAID controller system; see also Abstract**] comprising the steps of:

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receiving first information from the FC system, wherein the first information is associated with a storage device disposed in the FC system [**a RAID controller inherently receives information about the disk drives in the RAID system**];

processing the first information to identify information intended for the user device [**the RAID controller inherently processes information intended for the user device—either another disk drive or, ultimately, host computer 102 of Fig. 1; see also Figs. 3-4**];

storing the identified information in a buffer as first stored information [**UARTs inherently have up to 16 byte buffers**]; and

communicating the first stored information via the low bandwidth interface to the user device [**Figs. 5-7; the UART communicates with host computer 102 via RS-232 (Fig. 5) via the low bandwidth DB9 Conn.**].

4. With regard to claim 2, El-Batal et al. discloses receiving second information via the low bandwidth interface from the user device for transmission over the FC system, wherein the second information is associated with a storage device disposed in the FC system [**a RAID controller inherently receives information about the disk drives in the RAID system**];

storing the second information in a buffer as second stored information [**UARTs inherently have up to 16 byte buffers**]; and

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communicating second stored information via the FC system after an amount of second stored information exceeds a predetermined value [Figs. 5-7; the UART communicates with host computer 102 via RS-232 (Fig. 5) via the low bandwidth DB9 Conn. and must pass buffered information via the FC Fibre Channel (or SCSI channel) after predetermined number of clocking cycles after initially passing the first stored information via the UART buffers].

5. With regard to claims 9-12, El-Batal et al. discloses a system for facilitating communication over a fibre channel (FC) system [Fig. 1, the RAID controller is coupled to the host processor via a SCSI bus or Fibre Channel interface 141 and disk drives coupled via SCSI bus or Fibre Channel interface 140; col. 3, lines 9-15; *see also* col. 4, lines 20-26] via a low bandwidth interface connected to a user device [Figs. 1-3, Examiner interprets the FC system as the RAID controller system; *see also* Abstract; wherein the RAID controller system uses the RAID controller (array controller) and the user device is host computer 102], comprising:

a buffer[UARTs inherently have up to 16 byte buffers];

an interface to the FC system [Fig. 1, the RAID controller is coupled to the host processor via a SCSI bus or Fibre Channel interface 141 and disk drives coupled via SCSI bus or Fibre Channel interface 140; col. 3, lines 9-15; *see also* col. 4, lines 20-26],

a low bandwidth interface [Figs. 5-7; the UART communicates with host computer 102 via RS-232 (Fig. 5) via the low bandwidth DB9 Conn.]; and

a microprocessor [RAID controller],

wherein the microprocessor is disposed to arbitrate access to the FC system to communicate information received from the low bandwidth interface when an amount of received information exceeds a predetermined value [Figs. 5-7; the UART communicates with host computer 102 via RS-232 (Fig. 5) via the low bandwidth DB9 Conn. and must pass buffered information via the FC Fibre Channel (or SCSI channel) after predetermined number of clocking cycles after initially passing the first stored information via the UART buffers],

wherein the microprocessor causes information received from the FC system to be buffered before communication via the low bandwidth interface [UARTs inherently have up to 16 byte buffers; Fibre Channel uses Fibre Channel Layer 2 (FC-2) for flow control purposes to prevent buffer overflow; moreover, the RAID controller inherently uses FC network protocols], and

wherein communicated information is associated with a storage device disposed in the FC system [a RAID controller inherently receives information about the disk drives in the RAID system].

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6. With regard to claims 17-20, El-Batal discloses a system for facilitating communication between Fibre channel arbitrated loop topologies [Fig. 1, the RAID controller is coupled to the host processor via a SCSI bus or Fibre Channel interface 141 and disk drives coupled via SCSI bus or Fibre Channel interface 140; col. 3, lines 9-15; *see also* col. 4, lines 20-26] via a low bandwidth interface connected to a user device [Figs. 1-3, Examiner interprets the FC system as the RAID controller system; *see also* Abstract; wherein the RAID controller system uses the RAID controller (array controller) and the user device is host computer 102], comprising:

- a buffer ; [UARTs inherently have up to 16 byte buffers];

- a first interface to a first Fibre Channel arbitrated loop topology [Fig. 1, the RAID controller is coupled to the host processor via a SCSI bus or Fibre Channel interface 141 and disk drives coupled via SCSI bus or Fibre Channel interface 140; col. 3, lines 9-15; *see also* col. 4, lines 20-26];

- a second interface to a second Fibre Channel arbitrated loop topology [Figs. 1 and 4; interpreted as the controller to controller communication for which each RAID controller arbitrates their own Fibre Channel loops];

- a low bandwidth interface [Figs. 5-7; the UART communicates with host computer 102 via RS-232 (Fig. 5) via the low bandwidth DB9 Conn.]; and

- a microprocessor [RAID controller],

- wherein the microprocessor facilitates communication between the first and second Fibre Channel arbitrated loop topologies [RAID controller to RAID controller communications],

wherein the microprocessor is disposed to arbitrate access to at least one of the first and second Fibre Channel arbitrated loop topologies to communicate information received from the low bandwidth interface [**each controller can hold the other in reset, col. 5, lines 35-47**], and

wherein the microprocessor causes information received from at least one of the first and second Fibre Channel arbitrated loop topologies to be buffered before communication via the low bandwidth interface [**UARTs inherently have up to 16 byte buffers; Fibre Channel uses Fibre Channel Layer 2 (FC-2) for flow control purposes to prevent buffer overflow; moreover, the RAID controller inherently uses FC network protocols**].

7. With regard to claims 3 and 15, El-Batal et al. discloses utilizing flow control procedures associated with the FC system to prevent a first buffer from being overwritten [**Fibre Channel uses Fibre Channel Layer 2 (FC-2) for flow control purposes to prevent buffer overflow**].

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5-8, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over El-Batal et al. (USP 6,625,144) in view of Hunt et al. (USP 6,112,276).

10. With regard to claims 5-8, 14, and 16 El-Batal discloses a RS-232 connection to host computer 102, as noted above in claims 1, 9 and 17. However, El-Batal et al. does not specifically disclose a diagnostic PC utilized to diagnosis disk array operations further including the step of emulating a disk array. Hunt et al. discloses a module that performs remote diagnostics via a modem located at a customer's facility [**col. 11, lines 23-28**]. Both El-Batal et al. [**as noted in claim 1 above**] and Hunt et al. pertain to RAID disk arrays using Fibre Channel to transfer data [**see, for example, Hunt et al., col. 3, line 1; col. 4, lines 13-23**]. Moreover, El-Batal et al. discloses maintenance access communications [**col. 3, lines 53-56**]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a processor to diagnose the RAID disk array(s) in order to perform diagnostics and, ultimately, to communicate the status of the RAID disk controller, and the RAID disk arrays to the user [**even to a remote location, Hunt et al., col. 13, lines 38-39; which inherently includes an internet service provider**].

Response to Arguments

11. Applicant's arguments filed November 14, 2005 have been fully considered but they are not persuasive.

12. For claims 1, 9, and 17, Applicant argues that, although the UART of El-Batal has 16 byte buffers, that they do not store information [**Applicant's Amendment dated November 14, 2005, page 5, lines 17-20**]. Examiner asserts that the use of up to 16 byte buffers *necessarily* stores bytes of information for processing.

13. For claims 1, 9, and 17, Applicant also argues that the 'stored' information is not communicated via a low bandwidth interface [**Applicant's Amendment dated November 14, 2005, page 6, lines 5-8 and 20-24; page 7, lines 9-11**].

14. Examiner asserts that, as explained in claims 1, 9, and 17 above, stored information is communicated via the low bandwidth interface to the user device [**Figs. 5-7; the UART communicates with host computer 102 via RS-232 (Fig. 5) via the low bandwidth DB9 Conn.**]

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15. For example, Fig. 2 [Charon Controller] shows a DB-9 cable connected to the host computer [102]. To further illustrate, Fig. 1 shows an interface to the system wherein the RAID controller is coupled to the host processor via a SCSI bus or Fibre Channel interface 141 and disk drives coupled via SCSI bus or Fibre Channel interface 140 [col. 3, lines 9-15; *see also* col. 4, lines 20-26]. Fig. 5 shows how the DB-9 connectors match up with the RS-232 connections pin-by-pin in order to use the DB-9 connection to transfer information from the disks/disk controllers to the host computer [102] [Fig. 1, disk 110/disk controller 104 or disk 111/disk controller 106; the DB-9 connection is further shown in Fig. 2 from the disk/disk controller to the host computer (102)]. Figs. 6-7 show main board configurations [col. 2, lines 48-53]. Specifically, Fig. 6 shows the Charon Controller configuration wherein the DB-9 connector is shown pointing to a connection. This connection is the host computer [as explained for Fig. 2 above].

16. With regard to claims 5-8, 14, and 16, Applicant argues that El-Batal et al. and Hunt et al. do not have the claimed limitation [Applicant's Amendment dated November 14, 2005, page 7, line 27 to page 8, line 2] cited in claims 5-8 (storing information) and 14 and 16 (arbitrating access when an amount of received information exceeds a predetermined value).

17. With regard to claims 5-8, as explained in paragraph 12 above, Examiner asserts that the use of up to 16 byte buffers *necessarily* stores bytes of information for processing.

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18. With regard to claims 14 and 16, Applicant alleges that El-Batal et al. fails to include that which is claimed in claim 9 [i.e., arbitrating access from the low bandwidth interface when an amount of received information exceeds a predetermined value]. As stated above in paragraph 5, the UART passes buffered information via the FC Fibre Channel (or SCSI channel) after predetermined number of clocking cycles after initially passing the first stored information via the UART buffers (up to 16 byte buffers) wherein the Fibre Channel uses Fibre Channel Layer 2 (FC-2) for flow control purposes to prevent buffer overflow (i.e., arbitrated access) and the RAID controller inherently uses FC network protocols.

Conclusion

19. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

20. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark A. Mais whose telephone number is (571) 272-3138. The examiner can normally be reached on 6:00-4:30.

22. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on (571) 272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 25, 2005


Ajit Patel
Primary Examiner